



## Electrical code issues and answers.

### ● Have You Moved? Did You Remember To Notify The Department?

Failure to provide the department of your address change is the most common reason individuals fail to renew their electrician certificates or trainee cards. The licensing section often hears the complaint; "I didn't get notified for renewal." Unfortunately, that happens, since renewal notifications are often not forwarded by the postal service. Failure to renew your certificate within ninety days of the expiration date will result in revocation of the certificate. You will then have to purchase a trainee card, reapply, and retake the examination to continue working. Reciprocity agreements are not valid for anyone who has previously held a Washington certificate. These individuals would also be required to reapply and retest in Washington. A word of warning, anyone working with an invalid certificate will be subject to a citation. **Keep the department informed of all address changes!**

### ● HVAC/R Examination Deadline Rapidly Approaching

The deadline for qualifying for the new HVAC/Refrigeration limited energy technician examination is **March 1, 2000**, for applicants seeking to use previous experience to qualify. The following steps must be followed:

- ◆ Submit to the department a signed and notarized letter from employer(s) stating that you have "performed HVAC or refrigeration equipment installation, service, or repair that includes limited energy control wiring."
- ◆ Employer contractors must state in the letter that they were engaged full time in the business of HVAC/R equipment installation or repair work and must supply copies of their RCW 18.27 contractor's registration or business license for the time period being certified for their employees.
- ◆ The department will also consider applications from those individuals who have performed work in this specialty category as regularly employed maintenance staff of property owners (commercial, industrial, manufacturing facilities, public facilities) normally exempt from electrical certification.
- ◆ Technicians must submit their qualifying application letter and all of the following documents and pay the appropriate fees at the same time: the **technician examination application (\$27.00)**, **original specialty certificate fee (\$42.50)**, and a **third-year specialty trainee card application (\$20.75)**, **prior to approval to sit for the examination**. The application and original certificate fees are paid only once, training certificates must be renewed annually. An additional examination fee (or re-testing fee if necessary) is paid directly to the testing company not L&I.
- ◆ Applicants with at least two years of approved experience qualify for a third -year HVAC/R trainee card which allows them to work alone and to supervise and verify the training hours for first and second year trainees.
- ◆ All individuals submitting qualifying applications prior to March 1, 2000 will remain qualified to take the exam and have until **March 1, 2002** to pass the exam. "Third year HVAC/R trainees" who fail to pass the exam by March 1, 2002 will no longer be allowed to work without supervision or supervise others.
- ◆ **After March 1, 2000**, applicants must show at least 4000 hours of experience per WAC 296-401A-210 as a certified trainee installing, servicing, or repairing HVAC or refrigeration systems under the direct supervision of an HVAC/R limited energy technician, a limited energy specialty electrician, or a journeyman electrician.
- ◆ ***What if I don't have two years experience and can't qualify for the third year card?*** Applicants can receive a first-year trainee card by paying the (\$20.75) training certificate fee. If they have a notarized letter from their employer showing at least one year of experience, they can receive a second-year trainee card for the same fee.

### ● Wiring Methods to Swimming Pool Motors.

NEC 680-25(c) states that *"Pool-associated motors shall be connected to an equipment grounding conductor sized in accordance with Table 250-122 but not smaller than No. 12. It shall be an insulated copper conductor and shall be installed with the circuit conductors in rigid metal conduit, intermediate metal conduit, rigid nonmetallic conduit, or Type MC cable listed for the application."*

At the time of this writing there is at least one MC cable manufacturer claiming to have "swimming pool cable". There currently is no standard in place offering criteria for MC cable evaluation that will allow MC cable to bear a

listing mark specifically listing it as suitable for connection of pool associated motors.

This article allows the use of EMT on or within buildings and liquidtight flexible metal and flexible nonmetallic conduit where flexible connections are necessary at or adjacent to the motor. It is important to remember that the minimum size for the equipment grounding conductor in any raceway used to feed pool associated motors is #12AWG and it must be an insulated copper conductor.

The wiring methods for pool associated motors in the interior of a one family dwelling or a building associated with a one family dwelling are less restrictive. Any wiring method recognized in Chapter 3 of the NEC that contains a copper equipment grounding conductor that is insulated or covered can be used. It too must be #12AWG copper minimum. Flexible cord can only be used in accordance with NEC 680-7.

### ● **Department to Offer CEU's for Electrical Stakeholder Meetings**

The department has received approval from the electrical board to offer four (4) continuing education units to persons attending scheduled electrical stakeholder meetings and satisfactorily completing a twenty-five question exam at home. Electricians will receive four CEU's only after **both** attending the 2 hour meeting and passing the take home test with a score of 70% or higher. **No CEU's will be awarded to those who do not comply with both requirements and only 4 CEU's for Stakeholder meetings will be awarded in any fiscal year (July 1 to June 30).**

Electrical stakeholder meetings are scheduled in the fall and winter months when the construction business usually slows down. All meetings are attended by someone from the Chief Electrical Inspector's staff. These meetings provide an excellent opportunity for contractors, electricians, and trainees to ask questions and provide input to the department. Contact your local inspection office about scheduling of stakeholder meetings in your area.

### ● **Computer Rooms**

Article 645 of the National Electrical Code entitled "Information Technology Equipment" applies to information technology rooms that comply with all six of the conditions listed in NEC 645-2.. Those installations that do not meet all of the 645-2 requirements cannot use this Article of the code, but must meet other applicable requirements found elsewhere in the code. No other part of Article 645 will apply to installations that do not first meet the conditions of NEC 645-2.

### ● **Grouping of Manufactured Home Disconnects.**

NEC 230-40 requires that each service drop or service lateral supply only one set of service entrance conductors. Exception Number 3 allows a single family dwelling unit and a separate structure to have one set of service entrance conductors run to each, when supplied from a single service drop or lateral. NEC 230-71 permits up to six disconnects for each service allowed by NEC 230-2 and each set of service entrance conductors allowed by Exceptions 1 and 3 in NEC 230-40. NEC 230-72 requires those service disconnects to be grouped in one location.

Where a manufactured home and a separate structure on residential property have their respective service disconnects supplied from a single service drop or lateral and the installer **chooses** to locate both disconnects in or on the separate structure, **the disconnects must be grouped together in one location.** Since the service disconnect for a manufactured home must be within sight of the mobile home, the two service disconnects are most commonly installed together on the outside of the separate structure.

### ● **Receptacle Loads Added to Lighting Demand Factors.**

In other than dwelling units, general use receptacles must be calculated at 180va each per NEC 220-13. The general use receptacle load may be added to the lighting loads and may have the demands of Table 220-11 applied to them.

When using Table 220-11, the Lighting Load Demand Factors, care must be used to only apply the demands to receptacles that are in areas described in the table. In Table 220-11, both the "Hospitals" and "Hotels-Motels" headings have an asterisk note (\*) that states the table applies only to areas where the entire lighting is not likely to be used at one time. In a hospital, the only areas that the demands shown in Table 220-11 for lighting and receptacles could be applied would be patient rooms and storage rooms since most other areas have continuous lighting loads. In hotels and motels, guestrooms and storage areas would be considered non-continuous. For general use receptacles in other areas, the demands of Table 220-13 may still be applied to them.